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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* KIMIYASU SATOH and HIROYUKI INOKAWA

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Appeal 2009-008795  
Application 10/537,417<sup>1</sup>  
Technology Center 2600

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Decided: April 21, 2010

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Before MARC S. HOFF, CARLA M. KRIVAK, and THOMAS S. HAHN,  
*Administrative Patent Judges.*

HOFF, *Administrative Patent Judge.*

DECISION ON APPEAL

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<sup>1</sup> The real party in interest is Sony Corporation.

## STATEMENT OF CASE

Appellants appeal under 35 U.S.C. § 134 from a Final Rejection of claims 1-12. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

Appellants' invention relates to an input apparatus having a piezoelectric actuator drive control method providing force sense feedback to a user. The control portion of the input apparatus controls the deformation mechanism to start driving the piezoelectric actuator to gradually deform the operation surface in one direction and then in the reverse direction, causing the user to feel a force sense as feedback (Spec. 4-5). The period for which the operation surface is deformed in one direction is larger than the period for which the operation surface is deformed in the reverse direction (Spec. 5).

Claim 1 is exemplary of the claims on appeal:

1 An input apparatus that outputs coordinate values of an operation surface that the user has pressed as an input operation, deforms the operation surface, and causes the user to feel a force sense as a feedback with the deformed operation surface, comprising:

a deformation mechanism portion that uses a piezoelectric actuator composed of a piezoelectric bi-morph device and that deforms the operation surface;

a press force detection portion that detects whether the operation surface has been pressed; and

a control portion that controls said deformation mechanism portion to start driving the piezoelectric actuator to gradually deform the operation surface in one direction and then to deform the operation surface in a reverse direction so that the period for which the operation surface is deformed in one direction is sufficiently larger than the period for which the operation surface is deformed in the reverse direction when said press force detection portion detects that the operation surface has been pressed.

The Examiner relies upon the following prior art in rejecting the claims on appeal:

|               |                    |               |
|---------------|--------------------|---------------|
| Wu            | US 6,422,757 B1    | Jul. 23, 2002 |
| Divigalpitiya | US 2003/0205450 A1 | Nov. 6, 2003  |
| Yoshitaka     | JP 11-212725       | Aug. 6, 1999  |
| Shigeki       | JP 2002-259059     | Sep. 13, 2002 |

Claims 1-7 and 9-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shigeki in view of Yoshitaka and Divigalpitiya.

Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Shigeki in view of Yoshitaka, Divigalpitiya, and Wu.

Throughout this decision, we make reference to the Appeal Brief (“App. Br.,” filed October 20, 2008), the Reply Brief (“Reply Br.,” filed January 26, 2009) and the Examiner’s Answer (“Ans.,” mailed November 26, 2008) for their respective details.

## ISSUES

Appellants argue that none of the cited references teach or suggest a control portion that controls the deformation mechanism to start driving the piezoelectric actuator to deform the operation surface in a first direction, and then in the reverse direction, as recited in independent claims 1 and 12 (App. Br. 5). The Examiner finds that Shigeki teaches this feature (Ans. 4).

Appellants further argue that none of the cited references teach or suggest that the period for which the operation surface is deformed in one direction is sufficiently larger than the period for which the operation surface is deformed in the reverse direction (App. Br. 6). By contrast, the Examiner finds that this limitation is met by Divigalpitiya (Ans. 5).

Appellants' contentions present us with the following issues:

Did the Examiner err in finding that Shigeki teaches a control portion that controls the deformation mechanism to start driving the piezoelectric actuator to gradually deform the operation surface in one direction and then to deform the operation surface in a reverse direction?

Did the Examiner err in finding that Divigalpitiya teaches a period for which the operation surface is deformed in one direction being sufficiently larger than the period for which the operation surface is deformed in the reverse direction?

### FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence.

#### *The Invention*

1. According to Appellants, they have invented an input apparatus having a piezoelectric actuator drive control method that includes driving the piezoelectric actuator to gradually deform the operation surface in one direction and then in the reverse direction, causing the user to feel a force sense as feedback (Spec. 4-5).

#### *Shigeki*

2. Shigeki teaches that when transparent electrode 2514 and transparent electrode 2534 are brought into contact due to the press of a user's finger, bobbin coil 35A (a "sense-of-force" device) operates to "put back" a user's finger "to a user side, and a user can perceive having been inputted as a sense of force" (§ 40; Fig. 4).

3. Shigeki does not teach driving a piezoelectric actuator to deform the operation surface in the same direction as the user's finger presses.

*Divigalpitiya*

4. Divigalpitiya discloses the composition of pressure activated switches, including the "relaxation time" needed for the switch materials to recover to their original state (§ 0033).

5. Divigalpitiya discloses touch screens and membrane switches activated by a touch such as from a finger, stylus, or "other appropriate object" (§ 0002).

PRINCIPLES OF LAW

On the issue of obviousness, the Supreme Court has stated that "the obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007). Further, the Court stated "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* at 416. "One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent's claims." *Id.* at 419-420.

ANALYSIS

CLAIMS 1-7 AND 9-12

The pending independent claims (1 and 12) recite driving the piezoelectric actuator to gradually deform the operation surface in one

direction and then to deform the operation surface in the reverse direction. Appellants argue that the cited references do not teach or suggest this limitation. In particular, Appellants assert that the Examiner erred in finding that Shigeki teaches driving the piezoelectric actuator to gradually deform the operation surface in one direction, and then in the reverse direction, because Shigeki only teaches driving the actuator in one direction, opposite to the force of a user's finger press (App. Br. 5).

We find Appellant's argument persuasive of Examiner error. The Examiner cites paragraph [40] of Shigeki as allegedly teaching driving the piezoelectric actuator to deform the operation surface in one direction, and then in a reverse direction (Ans. 4, 9). Shigeki paragraph [40] merely teaches that when transparent electrode 2514 and transparent electrode 2534 are brought into contact due to the press of a user's finger, bobbin coil 35A (a "sense-of-force" device) operates to "put back" a user's finger "to a user side, and a user can perceive having been inputted as a sense of force" (FF 2). We find no teaching in Shigeki of driving a piezoelectric actuator to deform the operation surface in the *same* direction as the user's finger press (FF 3). We have reviewed Yoshitaka and Divigalpitiya, and find no teaching in those references that a control portion controls a deformation mechanism to deform an operation surface in one direction, and then in a reverse direction. The Examiner has thus failed to establish a prima facie case of obviousness for claims 1-7 and 9-12.

Appellants further argue that the Examiner erred in finding that Divigalpitiya teaches different periods for driving the surface in one direction, then in a reverse direction (App. Br. 6). We agree with Appellants that Divigalpitiya does not teach driving a surface in one direction, then in

the reverse direction. Rather, Divigalpitiya discloses the composition of pressure activated switches, including the “relaxation time” needed for the switch materials to recover to their original state (FF 4). Divigalpitiya does not disclose “driving” a surface by anything other than a finger, stylus, or “other appropriate object” (FF 5).

Appellants have shown that the Examiner erred in rejecting claims 1-7 and 9-12 under § 103 over the combination of Shigeki, Yoshitaka, and Divigalpitiya. As a result, we will not sustain the rejection.

#### CLAIM 8

As noted *supra*, we do not sustain the rejection of claim 1, from which claim 8 depends. We have reviewed Wu, and find that it does not remedy the deficiencies of Shigeki and Divigalpitiya. Therefore, we will not sustain the § 103 rejection of claim 8, for the same reasons expressed with respect to parent claim 1, *supra*.

#### CONCLUSIONS

The Examiner erred in finding that Shigeki teaches a control portion that controls the deformation mechanism to start driving the piezoelectric actuator to gradually deform the operation surface in one direction and then to deform the operation surface in a reverse direction.

The Examiner erred in finding that Divigalpitiya teaches a period for which the operation surface is deformed in one direction being sufficiently larger than the period for which the operation surface is deformed in the reverse direction.



Appeal 2009-008795  
Application 10/537,417

ORDER

The Examiner's rejection of claims 1-12 is reversed.

REVERSED

ELD

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